Small Label UID Format for Part Tracking Applications

Presented BY

APTEC International, Inc.

Robert Rylander and Associates

Agenda

- What is UID
- Data, Application Text Identifiers
- UID Structure
- UID Training
- Small Label Marking
  - Benefits
  - Specifications
  - Applications
- Live Demonstration

What is UID

- UID provides the ability to distinguish one item from another.
- UID is Globally Unique
- Data integrity throughout the life of an Item
- Data Quality

What is UID

- Set of Data Elements for tangible assets
  - Enterprise Identifier, Serial Number
  - Enterprise Identifier, Part Number, Serial Number
- Assigned by an Enterprise
  - Business organization or firm
    - Commercial partnership (two or more persons)
- Enterprise Identifier
  - Assigned by registration or controlling authority
    - Dun & Bradstreet's (DUNS)
    - Uniform Code Council (UCC) / International (EAN)
    - Defense Logistics Information Service (CAGE)

What is UID

- Two Methods (Construct #1 and #2)
1. Serialization within the Enterprise Identifier
    - Issuing agency code
    - Enterprise Identifier
        - Unique Serial Number (numbers / letters)
        - Assigned by the manufacturer / vendor

What is UID

2. Serialization within a Part Number

- Issuing agency code

- Enterprise Identifier

- Original Part Number (numbers / letters)
    - Same form, fit, function, and interface

- Unique Serial Number (numbers / letters)
    - Assigned by the manufacturer / vendor

What is UID

- Acceptable Alternatives
- Must meet data requirements for unique identification
  - EAN.UCC Global Individual Asset Identifier (GIAI)
  - EAN.UCC Returnable Asset Identifier (GRIA)
  - ISO Vehicle Identification Number (VIN)
  - Electronic Serial Number (ESN) for cellular phones only
  - EPC Electronic Product Code
  - For further understanding go too:
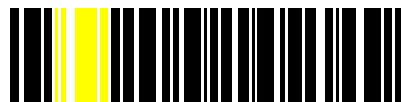
http://www.acq.osd.mil/uid

Data, Application, Text Identifiers

A DI is defined as a specified character (or string of characters) that defines the general category or specified use of the data that follows.

- P
- 1P
- 12P
- 123P

Data, Application, Text Identifiers

Data, Application, Text Identifiers

Sample Categories (6 of 27)

D = Date

H= Human resources

K= Trading Partner Transaction

L= Location

P= Item

Q= Measurement

Data, Application, Text Identifiers

Category 16

P   = Item ID (customer assigned)

1P = Item ID (supplier assigned)

2P = Rev Level, Eng. Change

30P = Current Part Number

20P-24P= Extension of P

30P-34P = Extension of IP

… Plus Others

Data, Application, Text Identifiers

Category 22 (Party to the Transaction)

12V= DUNS number identifying the manufacturer

17V= U.S. DOD CAGE Number

Data, Application, Text Identifiers

Category 19 Traceability number for an entry

S   = Serial Number assigned by supplier

25S = Unique Identifier Including Issuing
         agency code

18S =   Unique Identifier not Including Issuing
         agency code

Data, Application, Text Identifiers

Application Identifiers

AI	Content	Format
00	Serial Shipping Container Code	N2+N18
01	Shipping Container Code	N2+N14
30	Quantity Each	N2+N...8
420	Ship to (deliver to) postal code	N3+AN...9
421	Ship to postal code with 3-digit ISO	N3+N3+AN...9

... Plus Others

Data, Application, Text Identifiers

- Text Elements
  - Air Line Industry
  - Spec 2000 Data Directory
    - CAGE   CAG * MFR / SPL**
    - DUNs   DUN *
    - EAN.UCC   EUC *
    - SN within EID   SER / UCN**
    - SN within PN   SEQ *
    - Original PN   PNO *
    - Current PN   PNR
  - * = Cannot be used in UID Construct 2
  - ** = Enterprise other then Manufacturer
  - Text Elements are three characters.

Data, Application, Text Identifiers

- DI / AI and Text Elements Equivalent

Enterprise ID	DI	AI	Text Elements
Cage/NCAGE	17V		CAG * MFR/SPL
DUNS	12V		DUN*
EAN . UCC	3V		EUC*
Other Agencies	18V	95	
SN within EID			SER/UCN
SN within PN	S	21	SEQ*
Original PN	1P	01	PNO*
Current PN	30P	240	PNR
UID with IAC	25S	8004	
UID no IAC	18S		USN/UST

* Cannot be used until approved by Air Transport Association

Data, Application, Text Identifiers
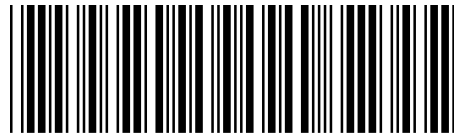
(17V) 2D6-71
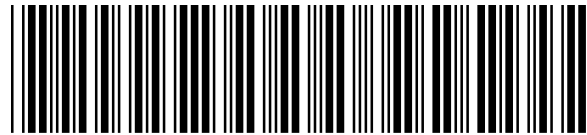
(S) ABC333-001

(1P) F100200300400AP

Data, Application, Text Identifiers

ISO 15434 Start String

Record Separator

CAGE Code Data

Part Number DI

Serial Number DI

End Of Transmission

[)>06 ᴿₛ 17V19453 ᴳₛ 1P1234 ᴳₛ S786950 ᴿₛ ᴱOₜ

Format Code (DIs)

CAGE Code DI

Group Separator

Part Number Data

Serial Number Data
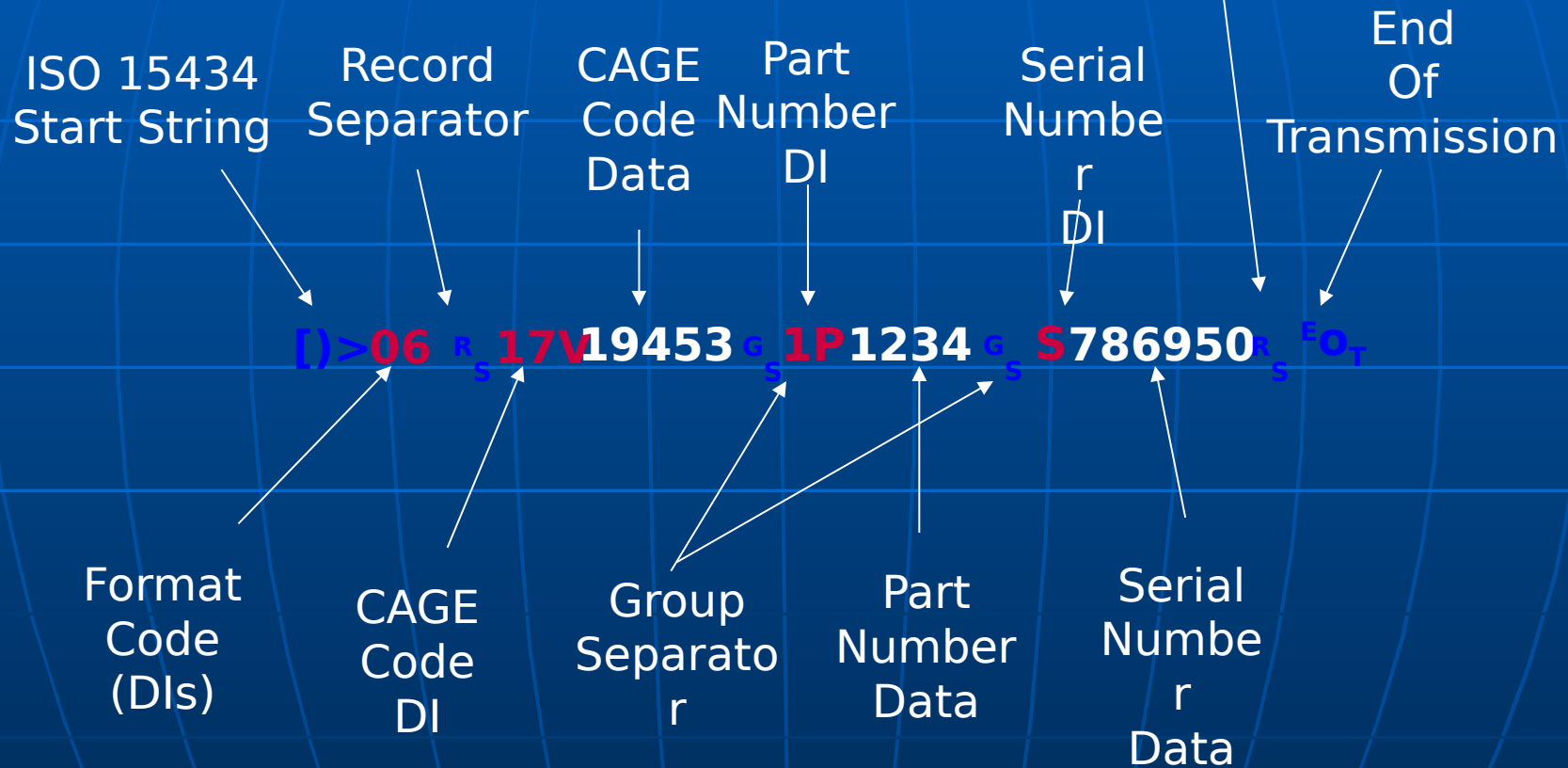
MILSTD 130L Format

UID Structure

- Issuing Agency Codes (IACs)

Issuing Agency Code	Issuing Agency	Enterprise ID
0-9	EAN-International EAN.UCC	
LB	Telcordia Technologies	ANSI T1.220
UN	Dun & Bradstreet	DUNS
D	Allied Committee 135	CAGE
LH	European Health Industry Business Communications Council	EHIBCC

UID Structure

- Creating and Generating a UID
  - Only the Enterprise Identifier that assigned the SN can be used in the UID
  - Other data elements must be discrete (data qualifier) and be placed last in a mark
  - UID Data Elements shall be contained in:
    - Data Matrix ECC200 symbol
    - Contact memory buttons
    - 1D bar codes
    - InfoDot (preprinted labels)
    - RFID
  - Marks must remain legible for the life of the Item
  - If space available Human Readable UID information should be marked on the item.

UID Structure

- Metadata Requirements
  - UID not to exceed 78 characters
    - IAC not to exceed 3 characters
    - Enterprise Identifier not to exceed 13 characters *
    - Original Part Number not to exceed 32 characters *
    - Serial Number not to exceed 30 characters *
    - Possible 78 UID characters but the use of shorter field lengths is encouraged.
    * = Excluding Data Qualifiers

UID Structure

- Metadata Requirements
  - UID string of data must have worldwide uniqueness
  - Spaces should be deleted from UID data
  - No special characters in the EI
  - Only dashes (-) and forward slash (/) all other special characters are deleted from PN and SN
  - UID must contain upper case A-Z 0-9 and (-) (/)

UID Structure

- Special Rules for Existing Inventory
  - Enterprise Identifier missing
    - Use Activity for the EI
  - Part Number missing
    - Obtain PN from in-service engineer
  - Serial Number missing
    - Assign SN locally along with Activity as EI
  - Material Unidentifiable
    - UID should not be used
    - Program Manager could use Lot / Batch as a prefix to the serial number (munitions)

UID Structure

- Structuring Data Elements for Uniqueness
  - Data Identifiers (ISO/IEC 15434 Format 06)
  - Application Identifiers (ISO/IEC 15434 Format 05)
  - Text Element Identifiers (ISO/IEC TS 21849)

UID Structure

Data Identifiers Format 06

Data Elements	DI	Data Value	Encoded Data
EI DUNS	12V	077991289	12V077991289
SN with IAC	25S	UN077991289	25SUN077991289
		674A36458	674A36458
SN within PN	S	10936	S10936
Original PN	1P	4202435	1P4202435
Current PN	30P	4202435-01	30P4202435-01
UID no IAC	18S	0CVA5674A3	18S0CVA5674A3

Construct #1

[)>$_{R_S}$06$_{G_S}$**25S**UN077991289674A36458$_{R_S}$E$_{O_T}$
Reader Output: **UN077991289674A36458**

[)>$_{R_S}$06$_{G_S}$**18S**0CVA5674A36458$_{R_S}$E$_{O_T}$
Reader Output: **D0CVA5674A36458**

Construct # 2

[)>$_{R_S}$06$_{G_S}$**12V**077991289$_{G_S}$**1P**4202435$_{G_S}$ **S**10936$_{R_S}$E$_{O_T}$
Reader Output:**UN077991289420243510936**

UID Structure

Application Identifier Format 05

Data Elements	AI	Data Value	Encoded Data
Other Agencies	95	12345	9512345
SN within EID	8004	06141411A0B9C3D6	800406141411A0B9C3D6
SN within PN	21	1A0B9C3D6	211A0B9C3D6
Original PN	01	00061414199999	0100061414199999
Current PN	240	4202435-01	2404202435-01

Construct #1

[)>R_S05G_S800406141411A0B9C3D6R_SEO_T

Reader Output:06141411A0B9C3D6

Construct #2

[)>R_S05G_S0100061414199999G_S211A0B9C3D6 R_SEO_T

Reader Output:000614141999991A0B9C3D6

UID Structure

Data Elements	TEIs	Data Value	Encoded Data
CAGE	MFR	0CVA5	MFR0CVA5
SN within EID	SER	674A36458	SER674A36458
CAGE (EID not MFG)	SPL	0F3N5	SPL0F3N5
SN (EDI not MFG)	UCN	10936	UCN10936
Current PN	PNR	4202435-01	PNR 4202435-01

Construct #1

$[)>^{R}{}_{S}$DD$^{G}{}_{S}$MFR0CVA5$^{G}{}_{S}$SER674A36458$^{R}{}_{S}E O{}_{T}$

Reader Output:D0CVA5674A36458

$[)>^{R}{}_{S}$DD$^{G}{}_{S}$SPL0F3N5$^{G}{}_{S}$UCN10936$^{R}{}_{S}E O{}_{T}$

Reader Output: D0F3N510936

1. TEIs = 3 Alpha characters
2. DD = Special, interim DOD - specified format header
3. Cannot use construct #2 until CAG, SEQ, PNO, have been approved by Air Transport Association.

http://www.acq.osd.mil/uid

UID Structure

Data Identifiers

18S   Add IAC for Cage (D) for complete UID

25S   Constructed UID Has IAC
S

     17V (cage)/12V (Duns) UID= IAC+17V/12V+1P+S

     18V (Other Agencies)   UID=18V+1P+S

I   Constructed UID Equivalent (VIN)ISO: Vehicle ID

22S   Constructed UID Equivalent (ESN) Electronic SN

1B   Constructed UID Equivalent (GIAI/GRAI)

     UCC/EAN: Global Individual Asset ID / Global Returnable Asset ID

5B   Constructed UID Equivalent (GRIA)

     UCC/EAN: Global Returnable Individual Asset ID

UID Structure

Application Identifiers

21	UID=01+21 (01=14 characters)
8004	Constructed UID Equivalent (GIAI)
8003	Constructed UID Equivalent (GRAI)
8002	Constructed UID Equivalent (ESN)

Text Elements

SER	UID=IAC+MFR+SER (cage code)
USN/UST	Add IAC for cage (D) for Complete UID (Universal SN / Universal Serial Tracking #)
UCN	UID=IAC+SPL+UCN (SPL=cage other then MFG / UCN=Unique Component # other then MFG)

UID Training

- Seminars
- Webinar
- Self Paced Training CDs
  - www.infodotllc.com
  - Free less shipping and handling $50
  - Upon Registration
    - UID Updates Provided for 1 year
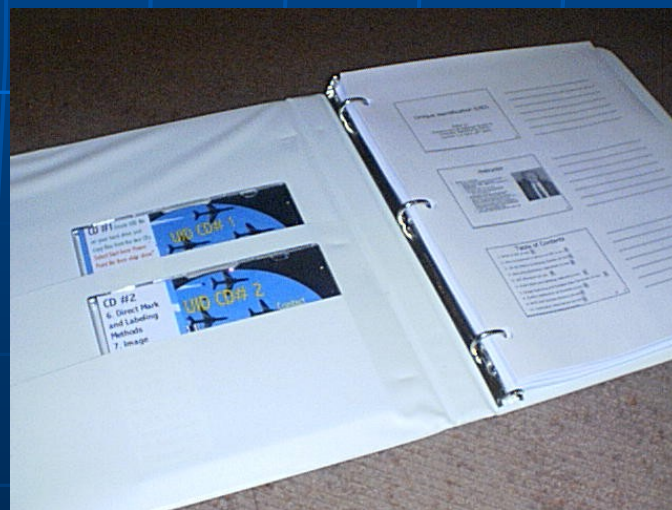
Small Label Marking (InfoDot)

- Benefits
  - Radial form factor provides for the most data in the smallest area
  - Non obtrusive small radial format
  - Orientation not critical
  - Is human & machine readable
  - Easy to field apply
  - Provides an audit trail for entered items

MC0947

Small Label Marking (InfoDot)

- Specifications
  - Size
    - ¼" Data Amount Construct #1 Up to 40 Chars
    - 3/8" Data Amount Construct #2 Up to 50 Chars
    - Larger radial InfoDots available as a custom size
  - Material
    - Standard: .003" Flexible and Durable Acrylate
    - Foil: .003" Flexible Anodized Aluminum
      - Up to 700f
    - UV Exposure / Salt Air & Water / Caustics

Small Label Marking (InfoDot)

- **Specifications**
  - Testing Agencies
    - Independent lab test (APTECH)
      - Sterility testing
      - Bio Compatibility
    - Metalcraft R/D testing

Metalcraft Test Results

Environmental, Chemical Atmosphere & Contact Tests Continued...

| Product Tested	Test Conditions	Effect on Readability
Image Intensified Photo Anodized	• Heptane, 72 hours	No effect
	• Hydrocarbon fluid	No effect
	• JP-4 fuel	No effect
	• Kerosene	No effect
	• Methyl Ethyl Ketone	No effect
	• Nitric Acid, 1% 40 hours	No effect
	• Phosphoric Acid, 1% 40 hours	No effect
	• Skydrol	No effect
	• Sodium Hydroxide	Affects overall readability*
	• Sulfuric Acid, 10% 24 hours	No effect
	• Turbine and jet fuel (Mil-L 5161C)	No effect
	• Tetra sodium pryo-phosphate, 1% 40 hours	No effect
	• Trisodium Phosphate	No effect

Applications

- Surgical Instrument Tracking
  - Old Methods
    - Problems
      - Surgical tape limitations
      - Manual Process
      - Prone to error
      - Time consuming
      - Lost or stolen
   - CJD Incidence
      - Incomplete trays
      - 30% tray error

Applications

- **Surgical Instrument Tracking**
  - New Methods
    - Labeling
      - User applied
      - Surface prep
      - Scan and associate data description
    - Instrument Trays
      - Unique label
      - Tray fulfillment
    - Autoclave Process
      - Load records provide sterilization data
    - Surgical Procedure
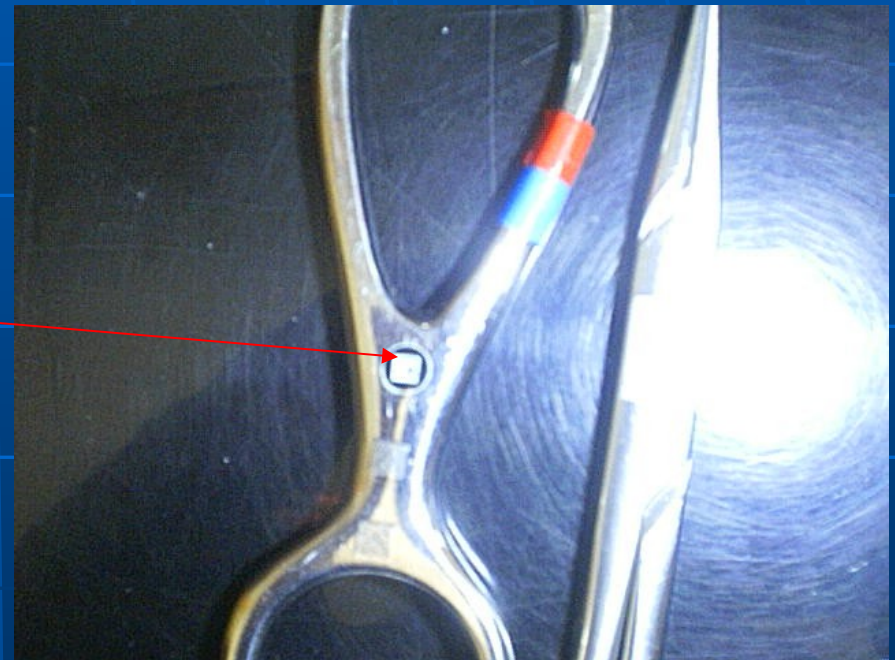
Applications

- Surgical Instrument Tracking
  - Scanning Instruments
  - Benefits
    - Delivers "Mission Critical" Instruments to the war fighter
    - To identify items associated with subassemblies
  - Navy
    - 9 Hospital Facilities including 2 Hospital Ships
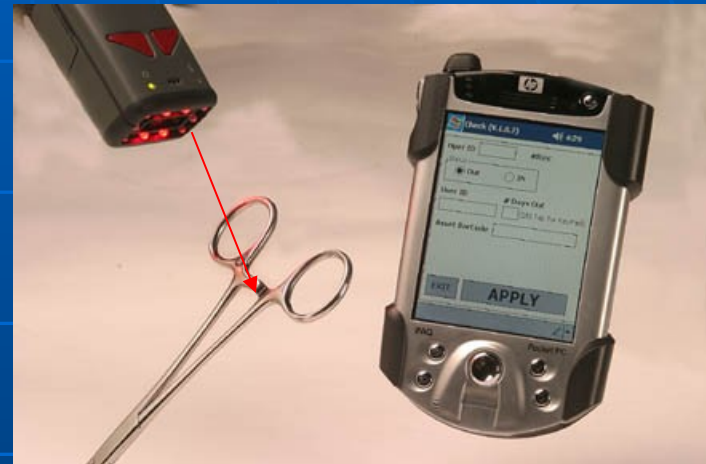
Applications

- Tool Tracking
  - Old Methods
    - Problems
      - Laser Etch
        - Expensive
        - Logistics
      - Scribe Tools
        - Hard to read
      - Lost Tools
        - Non traceable
        - Replacement cost
        - Non availability

Applications

- Tool Tracking
  - New Methods
  - Labeling Tools
  - Check in / Check Out
  - Configuration Control
  - Benefits:

Applications

- Home Land Security
- Evidence Tracking
  - Old Method
    - Problems
      - Lost Evidence
      - Transcribing Errors
  - New Method
    - Label Evidence
    - Scan InfoDot
    - Pictures
    - Voice Recording
    - GPS

Applications

- Asset Management
  - Old Method
    - Problems
      - Large Labels
      - Esthetics
      - Durability
      - Direct Part Marking Limitations

Applications

- Asset Management
  - New Method
    - UID Labeling at the Activity
    - Construct #1 Activity / SN
    - User Defined blocks of Labels
    - Label Asset
      - Scan InfoDot
      - Enter Data into PDA
    - Locations GPS / Tag
    - Inventories
      - Check In /Check Out
      - Transfer Assets
      - Asset Lookup / History
      - Field Maintenance
  - Live Demonstration

Thank You

Questions?